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SAN FRANCISCO PORT NEEDS, SHIPPING, AND AREA REQUIREMENTS

A report on Shipping Needs in the San Francisco Bay Area and the Capital Improvement Program of the Port of San Francisco

S T
Port Commission

October 1, 1971

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PORT OF SAN FRANCISCO

San Francisco Port Needs, Shipping, and Area Requirements

Report to

San Francisco Board of Supervisors

in response to

Resolution No. 278-71

Port of San Francisco
Ferry Building
San Francisco, California 94111
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October 1, 1971

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Summary

This summary is based on the data appearing in Sections A and B of this report, which evaluates future shipping needs of the Port and the area.

In the study which follows we have considered the Bay Area as a whole and have concluded, as have the many studies by experts that the Port has retained, that San Francisco must build new facilities to serve the new technology and the shipping industry. The Port is aware of its role and responsibility in environment, and recognizes the need to balance commerce and quality living. The body of this report evaluates future shipping needs of the Area and projects the needs of the Port in the light of the total Bay shipping requirements.

Fundamental changes in shipping technology and in world trade are taking place. They are still developing, and will continue to develop for the foreseeable future. It is the policy of the Port of San Francisco to remain as flexible as possible, in order to have the ability to meet the changes in technology as they develop. The Port is alert, aware that change is constant, and endeavors to anticipate and respond to the needs of shipping and cargo interests. But the Port can neither wait nor be late.

In Piers 80 through Pier 98, the Port now has a "multiport" complex concept unmatched by any other area in western United States. This southern waterfront area must continue to be developed and provide the flexibility necessary in order to serve the needs of commerce and to benefit the citizens of the City of San Francisco.

The Port is the catalyst for cargoes moving in world trade between the western part of the United States and the trade routes of the world. It serves more trade routes than any other single port on the Pacific Coast. In 1966, when the Arthur D. Little study was made, the value of general cargoes moving through the Port of San Francisco was $513.00 per ton, the highest of any port in the United States. It is now $819.00. Containerization, LOLO, COCO, roll-on/roll-off, and LASH concepts are particularly applicable to high value general cargoes.

As a catalyst, it is the duty of the Port to be aggressive in planning to meet the needs of this world trade, and inasmuch as ports act as the center portion of an hourglass for world trade cargoes and transportation, the Port has a definite commitment and duty to understand the nature of and adapt to the technological developments and to recognize that the capital intensive nature of new transportation systems must be adequately serviced.

Port activities, as confirmed by the Arthur D. Little report, are of great benefit to the economy. Conversely, if the Port fails in its duty, a major portion of the economy of the City and area will also fail.

The Port of San Francisco is in an enviable position for immediate current plans, inasmuch as fill for prospective Pier 94 is in existence and it is the only place in the entire Bay Area where this condition prevails.

Excellent access by rail and truck is available to present and foreseeable San Francisco port areas.

The population on the west side of the Bay is a great consumer of imports and producer of exports and thus a large local market exists for present and foreseeable world trade. In addition, the Port serves the hinterland of the western half of the nation.

The ten-year capital improvement program of the Port is included as Section B of this report. In summary, it proposes the following berths for completion 1972 - 1982: Pier 94, Pier 98, Pier 70-72. This will complete the complex which started in Piers 80 and 96 (LASH) and which modernized the areas in part in Piers 90 and 92.

Subsequent to this ten-year program, the following areas are planned as consolidations or partial consolidations: Pier 34-46A, Pier 48-50, Pier 54-64.

It is possible that it will be necessary to develop these facilities in stages rather than all at one time. The speed with which these facilities are developed and the ultimate size and configuration will depend on need and on the availability of financing. As explained elsewhere in this study, the Port has found that following a program of remaining flexible is absolutely necessary, now and in the foreseeable future.

SECTION A

Introduction

When this resolution was under consideration by the San Francisco Board of Supervisors, it was agreed that the study would be based on existing data and studies.(1) The reason for this is that a great deal of time and money(2) is required to gather and evaluate all pertinent data for a new study and this could not be accomplished within the time frame established.

In this report existing and foreseeable port needs of the Bay Area are considered in the light of technological development of ships and cargo handling and present and projected requirements of world trade.

I

The Port's Responsibility

To handle new shipping technology, new facilities are required in the Bay Area. San Francisco must share in the Bay Area's development. We cannot have half a port. If San Francisco does not finish its modernization program, it will not only fail to share in the growth, but will lose the business it now has with the concomitant adverse effect on existing indebtedness. It is the Port's duty to be responsible to its customers and to the citizens of San Francisco.

The Committee on Containerization, International Association of Ports and Harbors, in a report presented at the Montreal Conference in June, 1971, indicates that 77 ports throughout the free world have 107 new berths under construction. Of these, 18 United States ports

are building 36 new berths and adding 27 container cranes.

The Port of San Francisco constantly plans for the future and constantly studies the needs and ever-changing requirements of the shipping industry and of cargoes, and applies these facts in its planning functions.

The Port is in a competitive business while at the same time performing some of the functions of a public utility. As such, the Port must keep abreast of current trends and developments, must anticipate and be prepared to handle them, and must constantly revise its Master Plan in light of these changes.

All of these data must be converted into needs. First, the Port must compete with other ports in the Bay Area and on the Pacific Coast. Secondly, the Port of San Francisco is involved in regional competition, i.e., the Bay Area competes with the Vancouver-Seattle area and the Southern California area. The Port, therefore, has a dual responsibility, and it is in that light that the following data are presented and on which the recommendations are based.

II

Population Trends

"In our first economic census in 1810, the United States had a population of only 7.3 million and an assumed national wealth of only $3 billion, or about $409 for every man, woman and child.

"Today - just 150 years later - we have a population of more than 203 million, living in vastly changed conditions of health and wealth, and a Gross National Product of $1 trillion, or

roughly $4,926 for every man, woman and child.

"Projections for the start of the 21st Century run as high as a U.S. population of about 308,000,000 and a GNP in present dollars of about $3 trillion, or $9,203 for every man, woman and child.[3]

Population: California and the U.S. 1950-1980
(millions of persons)

	1950	1960	1970	1980
California	10.6	15.7	20.2	24.3
United States....	151.3	179.3	204.0	230.0
Cal. as % U.S...	7.0	8.8	9.9	10.6

Estimate for 1970 and forecast for 1980 by Economics Department, Wells Fargo Bank.

Source: U.S. Bureau of the Census.

III

Maritime Trends

"World shipbuilding and shipping operations have undergone a significant transformation in the past decade, and the rapid advances in new technology now being made are expected to bring about even more dramatic changes in the future. Ten years ago there was little interest in integrated container systems, barge carriers (LASH), or automated ship operations.

"Now entirely new systems are being used to expedite cargo shipments and reduce handling costs, special types of vessels are coming more into service. Containers and container ships are being constructed and delivered at a record rate. In mid-1970, there were orders placed for 180 containerships, totalling 3.6 million d.w.t." [4]

Fairplay, the International Shipping Journal, November, 1970,

in its annual report on world ships on order, describes container ships now being built throughout the world. It also states that 191 container ships were on order as of that date, that 15 conversions from breakbulk to container ships were on order, and that 9 contracts for conversion were pending or being negotiated.

IV

World Trade Constantly Expanding

"Seaborne trade has doubled over the past 20 years to 2,200 million tons a year to make world shipping a major growth industry," reports UK Shipping News, Journal of the UK Chamber of Shipping and the British Shipping Federation.

"---During the past twenty years (1950-1970), total world trade has grown from $58 billion to $305 billion.(5)

"Transportation in general and ocean transportation in particular is undergoing the most far reaching change since the application of steam propulsion to shipping. Not only is this fortunate, but it is necessary to meet the intermodal trade requirements of the foreseeable future.

"Perhaps the best method of indicating the scope of world trade for California is to cite these statistics.

"From 1962 to 1967, U.S. exports of goods and services rose from $30.3 billion to $45.7 billion, an increase of $15.4 billion or 51%, accounting for an annual average growth rate of 8.6%. U.S. imports rose from $25.1 billion to $40.9 billion, an increase of $15.8 billion or 63%.

"United California Bank in a recent report said:

"During the same five year period (1962-1967), California exports almost doubled, from $1.35 to $2.6 billion, an increase of $1,257 million or 93%. In the meantime, California imports increased at a lower rate, from $1.45 to $2.63 billion, an increase of $913 million or 63%.

"---By 1975, total California trade will reach $11 billion, an increase of $6 billion or 120% over 1967. More than 62% of this increase will come from California exported goods which will account for $6.3 billion by 1975, an increase of $3.7 billion or 142% over 1967." (6)

"The public ports of the world have never been without their problems and challenges, but today they are confronted with the major question of successful adaptation to a land and water shipping revolution. Much deeper channels and maneuvering areas are required; automated handling dominates the shoreside process; large assemblies of land are required for container berths; and for large-volume bulk operations. Labor responses to the revolution in technology present grave problems.

"---Cities as never before need broader economic bases, and in throttling their ports, they are shrinking their own economic opportunities.

"In summary, ports today need huge capital resources, great skill in adaptation, and the sharpest kind of marketing know-how, in a changing and competitive world. Even with all of these problems it is nevertheless clear that ports will have a vastly larger role to play, with predictions that the current 2 billion tons of shipping

afloat on the oceans each year will rise to 5 billion tons in the 1980's and to perhaps 35 billion tons when the year 2040 rolls around." (7)

"PACIFIC STATES' TRADE:
Prospects for the 1970's

"Foreign Trade moving through the Pacific states -- California, Washington, Oregon, Alaska and Hawaii -- tripled in volume during the past decade to $14.3 billion in 1970.

"While trade will not grow at the same pace during the seventies, its value is likely to rise to an annual level of between $35 and $40 billion by 1980, an increase of nearly 11% per year."

This forecast was made by Wells Fargo Bank economists in a recent report on "Pacific States and World Trade." (8)

SAN FRANCISCO CUSTOMS DISTRICT TRADE STATISTICS*
(In Millions of Dollars)

San Francisco Customs District

Year	Exports	Imports
1970	$ 1,839.4	$ 1,349.3
1969	1,862.9	1,241.5
1968	1,352.9	1,072.1
1967	1,266.8	849.5
1966	1,166.3	818.6
1965	1,115.2	704.4
1964	868.6	635.6
1963	895.1	570.8
1962	762.7	545.1
1961	737.2	496.6
1960	721.4	520.3
1959	547.4	525.4

Total California World Trade

1970	$ 8,644.6
1965	4,036.0
1956	1,904.0

*Source: Bureau of Census USDC, FT990

"The dollar volume of America's international trade is shifting westward, in response to the exceptional economic and population growth of the Far West, as well as that of the developing economies of Pacific Basin nations.

"West Coast ports, which handle the bulk of imports and exports, increased their share of foreign commerce from less than 10 percent of the national total in 1960 to 17.2 percent last year. The fact that nearly $3.2 billion worth of goods were carried through the San Francisco Customs District during 1970 demonstrates the Bay Area's importance as a major international trade center.

"The region's foreign trade volume advanced nearly 158 percent over the last decade, compared to a 130 percent rise nationally. San Francisco now ranks sixth among all U.S. customs districts in the dollar volume of commerce handled.

"The impact of the $3.2 billion is hard to measure precisely, but the importance of international commerce to the Bay Area's economy is unquestioned. It generates income from port operations, financing, food processing, transportation, warehousing and other related facilities.

"The extraordinary gain in export volume during 1969 saw San Francisco reclaim first place among West Coast exporters. Last year's mild decline, however, caused the San Francisco district to slip to second place in export volume on the Coast, and from fourth to fifth place nationally.

"The total volume of imports carried through the local district has soared 159 percent beyond the 1960 level. It added up to $1.35 billion in 1970 - the sixth largest volume among all U.S.

customs districts and 3.4 percent of the nation's total. Import volume locally increased $110 million or 8.7 percent, from 1969 to 1970.

"$3.2 BILLION WORTH OF GOODS CARRIED THROUGH THE SAN FRANCISCO CUSTOMS DISTRICT LAST YEAR. . .

"Approximately 90 percent - or $2.8 billion worth - of all international trade through the San Francisco Customs District in 1969 was waterborne. The combined import-export trade carried through seven Bay Area ports - San Francisco, Oakland, Alameda, Richmond, Martinez, San Pablo Bay and Carquinez Straits - totalled $2.6 billion in 1969, equal to 91 percent of the local district's total waterborne trade. This record high represented a 36.1 percent increase over 1968, and was 149.1 percent greater than the 1960 total of $1.1 billion.

"Improvement and expansion of the port facilities are largely responsible for the increased volume of goods handled. The ports of San Francisco ($1.69 billion) and Oakland ($592 million) together accounted for four-fifths of the 1969 waterborne trade in the local district.

Following is an excerpt from a study published by the Committee on Ship Channels and Harbors, American Association of Port Authorities, June, 1969:

> "Using an annual growth rate of 3.5 percent, Stanford Research Institute has estimated in an unpublished foreign trade study an increase in GNP from $790 billion in 1967 to $2,283 billion in 2000 in 1967 dollars. Against this national growth it is possible to estimate the growth of United States foreign trade.
>
> ". . .In 1967 it was valued at $57.8 billion and constituted 7.3 percent of GNP. The

> Stanford study assumed the evolution of a more restrictive trade policy over the next 30 years that may result in foreign trade averaging six percent of GNP. In addition, the study allowed for a 20 percent 'up or down' variation in trade. On this basis, Stanford predicted that United States foreign trade will range in value from about $110 billion to some $164 billion in 2000. This would indicate a doubling to tripling of total United States foreign trade, using 1967 as a base year."

V

Changes in Shipping

Although oligopoly is developing in the shipping industry due to the capital intensive nature of the technological breakthrough, this does not mean that because there are fewer steamship companies there is less cargo; the contrary is true. These larger companies will be handling more cargoes in larger ships. Developments in ships affect the ports and force ports to build larger, more complex facilities to meet the requirements of the shipping industry. For example, with smaller ships carrying up to 10,000 tons of cargo only limited areas need be provided to marshall these cargoes, but with ships carrying up to 20,000 and 30,000 tons of cargo, a much larger area must be available. If these cargoes are in containers, still larger backup marshalling areas must be provided with attendant rail and truck service needed; therefore, large, different type port facilities must be built. New, larger ships are faster, making more round trips per year. This requires larger marshalling areas due to the turnover of cargoes.

Capital investments in large, fast ships can be justified because their earning capacity is greater due to their increased

capacity to transport cargoes. Ports must face the burden necessary to accommodate them.

It is agreed that because of the economies involved, more trade will develop and thus more tonnage will move. Each steamship line, for maximum efficiency and economy, must have pier facilities without congestion to effectively handle its cargoes. If a ship must wait in the stream for a berth, or if production is slowed on the dock, costs rise and waste prevails. For example, today at Pier 50 seventeen steamship lines have been using this facility. Cargoes are unfortunately intermingled due to congestion, and time is lost through trucks waiting to discharge or pick up cargoes. As a result, handling and discharge costs are higher than at competing ports, and the area's economy suffers accordingly. Under the Port's capital improvement plan, this situation will be greatly relieved, benefitting both cargoes and the City's economy.

The Port of San Francisco must build new facilities to serve the current and future needs of existing customers, and to provide the services needed by former customers who wish to return to San Francisco when facilities are available.

Some cargoes have been temporarily unnaturally siphoned away from San Francisco because of the lack of suitable facilities and have gone to the Northwest and to Southern California. Based on conversations within the past few months with present Port customers, the Port's own figures show that unless the Port has substantially modernized by 1974, the Port will experience a loss of cargo from ships and shippers now using the Port in the amount of at least $1,400,000. The figure comes only from those who have served notice

on the Port of their technological requirements. There may well be others now using the Port who will have similar requirements. Such a substantial loss in ships and shipping will, owing to the nature of transportation, carry other cargo with it and away from the Port of San Francisco.

On the other hand, if San Francisco modernizes promptly, cargoes will return due to the natural advantages offered by the San Francisco Bay Area when we are capable of meeting the requirements of handling these cargoes. If they do not return, they will cause congestion in other port areas, due to the progressive increase of their natural cargoes. No one area has a competitive advantage over another area for very long. Other than for natural cargoes, San Francisco and the peninsula are large consuming areas, and it is more economical for the cargoes to arrive at San Francisco piers than for these cargoes to be drayed from another area. When the Port does not have the facilities to handle these cargoes, they must be transported at great expense from other port areas to this market. The same applies to exports originating in the West Bay.

VI

Larger Ships and Backup Areas

Ships are larger and faster, thus it is necessary to marshall cargoes. Today a container ship can be unloaded and loaded in a matter of 48 hours or less, whereas in the past it took from 7 to 10 days merely to discharge the same amount of cargo. Thus, tight scheduling is necessary, because of the capital intensive nature of the investment. A ship is not earning money while in port.

"One of the world's largest containerships, the ABEL TASMAN, is sistership to the Hapag-Lloyd owned SYDNEY EXPRESS, also operating with AECS, and which brought a record cargo of 1,589 containers back from Australia on a recent voyage.

"ABEL TASMAN's container cargo is stacked in six cellular holds each with container tiers six high and nine rows wide. Container guides are arranged to allow for unloading by twin-lift spreaders permitting two containers to be handled simultaneously - implying that two container cranes could discharge the entire 24,400-ton cargo in only 40 hours. . . . It is estimated that inland movement of ABEL TASMAN'S entire cargo would require 16 container trains, made up of 795 special wagons, and totalling six miles of freight train." (9)

"SEA-LAND'S SL-7 SHIPS TO CARRY 1086 CONTAINERS (35'-40') AT 33 KNOTS Eight Ships Coming Into Service in 1972 and 1973; Two More Projected - Oslo, Norway.

"The '1971 Container Ship Register' lists eight giant container ships currently under construction in three European shipyards for operation by Sea-Land Service, Inc.

"The ships, designated SL-7 high-speed, twin screw container ships, will be the largest general cargo ships in the world, larger in size than LASH vessels.

"Rated at 43,400 dead-weight tons each, the ships are much larger and much faster than any container ships now in operation or on order book anywhere in the world.

"(A container ship study prepared for the U.S. Maritime Administration by Matson Research Corporation of San Francisco assigns the ships a service speed of 33 knots.)

"The Register reported that each of the huge vessels will transport 1,086 full containers of 35' and 40' types. These will be the first ships built for Sea-Land Service able to transport the 40' containers which are standard for most other carriers.

"Despite their tremendous capacity and length overall of 944 ft., the ships are reported designed to operate in harbors of only 30 foot draft. The vessels have a beam of 105½ feet with a molded depth of 64 feet, according to the Register." (10)

Multinational corporations are a new development in today's economy, and this means there will be fewer but larger organizations involved in world trade. Economies of scale is the prevailing law of the future in shipping, in ports and in business. The modern tendency is toward concentration, development of bigger units, etc.

When containerization first developed, it was thought that 10-15 acres backup for each berth would be sufficient. Today the Port of San Francisco is planning new berths with 25-35 acres per berth backup. As ships become larger, more space is needed to handle the marshalling function.

No pier facilities in the Bay Area today are capable of handling the new space requirements on this scale of new and larger container ships. Existing steamship lines using Port of San Francisco facilities are either building new container ships or are modernizing their existing fleets by adding long midbodies capable of handling containers; thus more berthing and backup area is needed to keep and service these steamship lines and to help them expand to meet the needs of the future.

VII

National Policy and U.S. Flag Shipping

The national policy of the United States is to increase exports. It is also the national policy of the United States, as represented by the Maritime Administration, to promote the development of containerization and the LASH (Lighter Aboard Ship) concept. In consideration of these two national goals, it is the duty of ports throughout the United States to be prepared to serve this commerce. As exports increase, imports will increase. As ship technology develops, Port facilities must develop.

While it is safe to assume that everyone knows these facts, they are restated here in an effort to place the following information and comments in focus. The Port of San Francisco has been in existence for 109 years; it has not been wrong in the past, and it cannot afford to be wrong now in its analysis of the existing and foreseeable situation.

American President Lines, Pacific Far East Line, and States Steamship Company, U.S. Flag companies, each use the Port of San Francisco as home port.

"U.S. Flag ships still account for over 50 percent of the container capacity. In 1969, U.S. Flag containerships operating on the North Atlantic carried 59 percent of the 3.1 million tons of containerized cargo on that route. At the same time, American-flag ships accounted for 62 percent of the containerized movement in the U.S. Pacific - Far East trade.

"These figures take on even greater significance when one realizes that the amount of container cargoes on these two routes

is growing at a phenomenal pace. For example, final statistics for 1969 show that total cargo carried in containers on the North Atlantic top the 1968 figures by about 80 percent. Trans-Pacific trade aggregates for the same periods were even more striking since they showed a jump of some 250 percent." (11)

With the development of containerization and other transportation systems, such as roll-on/roll-off (RORO), carry-on/carry-off (COCO), and lift-on/lift-off (LOLO), unitization and LASH, new concepts of facilities are required because of the tremendous acreage necessary as backup to the Port area for the marshalling of cargoes for new faster and larger vessels. Not only are new facilities needed to meet today's requirements, but new facilities must be planned so that they will be flexible enough to handle the expansion which will come in world trade and the changing technology. What is produced today must be commercially viable in the foreseeable future.

VIII

Comprehensive Framework Study - California Region

A recent study, (12) and the data gathered are of interest. In commenting on projecting into the future this report states: "In estimating future needs for berths and backup acreage, it was assumed that all commodities would be handled by the most efficient means, limited only by their physical properties, and that land transportation at the ports would function efficiently.

"Terminal Facilities

Estimates of required terminal facilities were developed on the basis of the number of berths and related cargo-handling area

required to handle the projected waterborne commerce at the various ports of the San Francisco Bay System. Adjustments were made for probable periods of berth occupancy, continuation of present and projected competitive practices and the capacities of cargo carriers of various types. The following tabulation indicates projected inter-relationships between the number of berths available for each cargo classification and the projected acreages of supporting cargo-handling areas in each cargo classification.

Type	No. of Berths			Cargo-Handling Area (acres)		
	1980	2000	2020	1980	2000	2020
Liquid-bulk	47	49	56	500	600	700
Dry-bulk	45	46	48	400	450	500
Container	50	60	74	1,200	2,000	2,800
Break-bulk	48	55	52	400	450	500
TOTAL	190	210	230	2,500	3,500	4,500

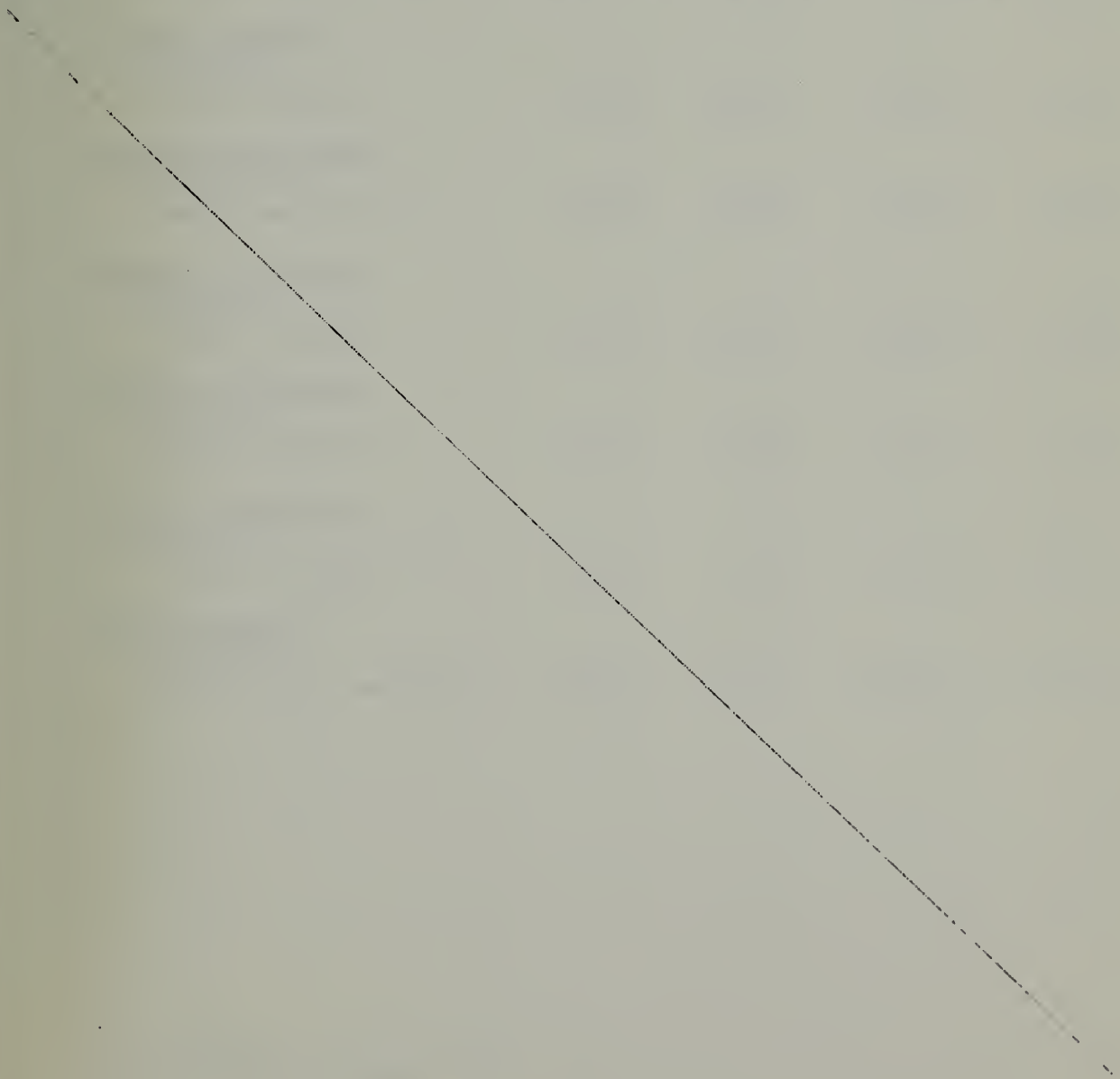
Liquid-bulk commodities consist almost entirely of crude petroleum and petroleum products. Dry-bulk commodities include nonmetallic ores, coal and coal products, scrap steel, building cement, stone, clay and glass, grains and marine shells. Container commodities include any method of handling pre-packaged cargo, such as palletized lumber, unitized automobiles and container vans of miscellaneous cargoes. Break-bulk commodities include cargoes which because of excessive dimensions, weight or other characteristics are not suitable for containerization, bulk handling or unitization. About 10 acres of cargo-handling area, on the average, will be available for each berth for dry-bulk, break-bulk or liquid-bulk cargoes. For containerized cargoes the ratio of about 24 acres of cargo-handling area to each berth in 1980 will increase to about 38 acres per berth in the year 2020. The projected increases from 170 berths in 1965 to 190 in 1980 to

210 in 2000 and 230 in 2020 assumes that the number of ports and port facilities in the San Francisco Bay system will continue to increase and that each publicly operated port will operate 'containerized' terminal facilities in addition to dry-bulk, break-bulk or liquid-bulk facilities. It is estimated that approximately 25 percent of existing terminal facilities, except those used for private industrial purposes (in the manufacturing process) are divided more or less equally among container, dry-bulk and break-bulk facilities. By the year 2020 containerized terminal facilities will probably increase from 1,700 acres in 1965 to 4,500 acres in 2020. Included in the total are tank farms for handling receipt of crude petroleum, exports of petroleum products, temporary storage and marshalling yards for dry bulk, general cargo and containerized cargo and warehousing for in-transit storage.

"Land Requirements

Land requirements will increase from 1,700 acres of cargo-handling area in 1965 to 4,500 acres in the year 2020. To achieve the required additional 2,800 acres of cargo-handling area about 5,600 acres would be needed, since about half the total area would be required for streets, utilities and service facilities. The necessary land could be obtained through use of presently undeveloped lands, through redevelopment of presently developed lands, or by reclamation of bay tidelands. Due to the shortage of both developed and undeveloped lands suitable for port expansion, it will be necessary to provide some of the required land by reclamation of bay tideland. The ecologic value of tidelands is well documented, and creation of land through fill should, accordingly, be held to the irreducible minimum.

The San Francisco Bay Plan, prepared by the Bay Conservation and Development Commission in 1969, recognized the need for some filling to provide for port expansion, but provided that any permitted fill should be in accord with an overall regional port development plan. The authorized 'In-Depth Study' now in progress, will give full consideration to the environmental effects of tideland fill, as well as to the other environmental and social considerations involved."



SAN FRANCISCO BAY SUBREGION

TABLE SF-1

Summary of Waterborne Commerce, 1/ 1965-2020

Type of Commerce	1965 2/	1980	2000	2020
Foreign Exports				
All ports				
Total, exports	2,904	3,510	5,190	8,080
Foreign Imports				
All ports				
Total, imports	6,085	24,220	50,080	88,420
Coastwise Shipments				
All ports				
Total, shipments	8,000	10,420	14,650	20,390
Coastwise Receipts				
All ports				
Total, receipts	11,717	15,700	19,610	21,960
Internal Shipments				
All ports				
Total, shipments	9,006	10,160	13,730	18,360
Internal Receipts				
All ports				
Total, receipts	7,738	9,430	13,700	17,240
Total Commerce				
All ports				
Grand total, subregion	45,450	73,440	116,960	174,450

1/ Thousands of short tons

2/ From "Waterborne Commerce of the United States, Part 4," Department of the Army, Corps of Engineers

SAN FRANCISCO BAY SUBREGION

TABLE SF-2

1965 Waterborne Commerce[1/], and
Projected Waterborne Commerce 1980-2020

Commodity Group	1965[2/]	1980	2000	2020
Foreign exports				
Agricultural products	775	1,123	1,786	2,915
Chemical products	600	1,176	1,887	3,252
Petroleum products	466	150	100	50
Crude petroleum	32	0	0	0
Metal products	578	482	601	822
Nonmetallic minerals	0	0	0	0
Other	453	579	816	1,041
Total, foreign exports	2,904	3,510	5,190	8,080
Foreign imports				
Agricultural products	548	666	804	900
Chemical products	140	181	160	200
Petroleum products	980	750	700	590
Crude petroleum	3,395	14,000	30,300	62,800
Metal products	262	4,903	10,776	14,320
Lumber products	239	336	480	610
Coal products	0	2,700	5,800	7,600
Other	521	684	1,060	1,400
Total, foreign imports	6,085	24,220	50,080	88,420
Coastwise shipments				
Agricultural products	521	773	1,246	2,170
Chemical products	415	629	1,141	2,025
Petroleum products	6,298	8,100	10,800	14,100
Crude petroleum	160	0	0	0
Metal products	14	21	39	72
Nonmetallic minerals	0	0	0	0
Lumber products	28	67	160	350
Building cement	210	300	450	590
Machinery	48	67	100	118
Other	306	463	714	965
Total, coastwise shipments	8,000	10,420	14,650	20,390

See footnotes at end of table

Continued

SAN FRANCISCO BAY SUBREGION

TABLE SF-2

1965 Waterborne Commerce[1/], and
Projected Waterborne Commerce 1980-2020 (Cont.)

Commodity Group	1965[2/]	1980	2000	2020
Coastwise receipts				
Agricultural products	1,160	1,634	2,446	3,315
Chemical products	299	392	578	764
Petroleum products	5,004	4,580	5,750	7,069
Crude petroleum	4,859	8,750	10,400	10,300
Metal products	199	125	130	130
Lumber products	68	30	30	30
Building cement	7	10	10	20
Other	121	179	266	332
Total, Coastwise receipts	11,717	15,700	19,610	21,960
Internal shipments				
Agricultural products	346	510	760	975
Petroleum products	8,350	9,200	12,295	16,400
Building cement	166	240	370	590
Sand and gravel	84	120	180	230
Other	60	90	125	165
Total, Internal shipments	9,006	10,160	13,730	18,360
Internal receipts				
Agricultural products	290	429	624	802
Chemical products	11	13	21	27
Petroleum products	5,053	6,505	10,404	13,598
Crude petroleum	370	0	0	0
Nonmetallic ores	375	179	197	210
Building cement	52	65	66	66
Stone, clay and glass	14	55	78	98
Sand, gravel and rock	0	0	0	0
Marine shells	1,494	2,100	2,200	2,300
Other	79	84	110	139
Total, Internal receipts	7,738	9,430	13,700	17,240
Total commerce	45,450	73,440	116,690	174,450

1/ Thousands of short tons

2/ From "Waterborne Commerce of the United States, Part 4," Department of the Army, Corps of Engineers

Inasmuch as the Port of San Francisco is a general cargo port, it is obvious that much of this projected increase will and should be in the Port of San Francisco. The exact number of berths and acres needed must await further developments in shipping, and, due to its importance to the economy, the Port Commission will make certain that the Port retains its fair share of these increases. On the assumption that San Francisco will provide approximately sixty percent of berths for other than liquid cargoes, the berth capacity, based on these figures, will increase by 19 between 1980 and the year 2020 and acreage or equivalent capacity will increase by 1,080 during the same period.

IX

Port Plan and Its Background - Relationship to Bay Area - Conclusions

The Port engaged experts for studies and recommendations, as set forth in the introduction to this report. It has further amassed through its staff current and projected data from shipping lines, shippers, and other sources as the foregoing report demonstrates.

Basically, the critical portion of the 1967 Arthur D. Little study is summarized in the following excerpt and table: (Pages 24-26)

"As indicated in Table 6, if the Port of San Francisco fully responds to the demands of container technology and builds a new facility to serve its container-oriented customers, the Port's trade-generated revenues will climb from $5.4 million in 1967 to $7.6 million in 1980. This rate of revenue increase is not exceptional, running to about 2 percent a year, but the path is steadily upward.

"Our approach to this 'no response' forecast of Port revenues was as follows. First, we identified the 20 largest carriers operating

out of the Port of San Francisco, based on the amount of wharfage each paid to the Port in fiscal years 1966 and 1967. By eliminating four specialized carriers of noncontainerizable cargoes, such as copra, newsprint and autos, we narrowed our list to the 16 largest carriers of general cargo. These are the shipping lines most directly involved in the shift to containerized cargo. Together, they account for 77 percent of the Port's foreign trade revenues, 81 percent of its cargo-related rents, and about 60 percent of its total cargo-generated revenues. Collectively, the decisions regarding port location of these carriers will determine the future of the Port as a center of foreign trade.

"Through a series of interviews we questioned these carriers (plus a number of smaller concerns) on the fraction of their total cargo they expected to be containerized two, five and ten years hence, as well as on the types of ships they were ordering and the port facilities they would require. We then estimated the fraction of Port revenues that would be lost, year by year, using the following assumption: a carrier will move from San Francisco once the proportion of its cargo traveling in containers surpasses 25 percent, if the Port does not provide a container terminal. Using this assumption and each carrier's estimate of the pace at which it expects to containerize, we constructed a profile of the withdrawal of carriers over time. The consequent loss of revenues to the Port was then derived, based on the percentage of Port revenues accounted for by each carrier in 1967. We repeated this procedure using 35 and 45 percent as the assumed proportion of containerized cargo before a carrier shifts its entire operation to another port.

"The 'no response' forecast of Port revenues is summarized is Part B of Table 6, taking the 35 percent containerized cargo cut-off as the critical point. If the Port does not provide container-handling facilities, by 1975 it stands to lose 35-45 percent of its revenues from foreign trade. By 1980, the loss would increase to 50 percent. The pace of the revenue decline is somewhat affected by whether a 25, 35, or 45 percent containerized cargo cutoff is assumed, but the powerful conclusion of this analysis remains. <u>If the Port fails to provide an adequate container-handling facility, it will lose one-third to one-half of its cargo-generated revenues by 1980</u>. (underlining added)

"While striking, the above estimate is, if anything, conservative. It confines itself to revenue losses among the 16 largest carriers and assumes that none of the smaller carriers will withdraw. Also, it assumes that the withdrawal of the first two or three firms does not accelerate the decisions of others.

"Figure 1 expresses the above data in percentage terms, showing the relative loss in trade-generated revenues under the three alternative assumptions as to when carriers would leave the Port, if no new container facilities are built. To translate these percentages into dollar equivalents we have adopted the middle-range percentage series; that is, the one which marks 35 percent containerization as the critical point at which a carrier would leave the port.

"The two forecasts of Port revenues are compared in Table 6 and Figure 2. Although the difference between a 'no response' and a 'full response' by the Port is small over the next several years, it soon accelerates to sizable proportions. If the Port does not build

a container terminal, we estimate that by 1975 its annual revenue from trade activity will be $2 million less than if a new terminal is offered to its customers. By 1980 the difference in revenues can be expected to reach $3.2 million. (pp. 24 and 26)"

Table 6

ALTERNATIVE FORECASTS OF THE PORT'S TRADE-GENERATED REVENUES

(Dollar figures in thousands)

Fiscal Year	Forecast A: Full Response			Forecast B: No Response		
	Dockage, Wharfage, Demurrage	Cargo Related Rents	Total	Dockage, Wharfage, Demurrage	Cargo Related Rents	Total
1966 (actual)	$3,442	$1,867	$5,309	$3,442	$1,867	$5,309
1967 (actual)	3,517	1,867	5,384	3,517	1,867	5,384
1968	4,220	1,960	6,180	4,070	1,890	5,960
1969	4,370	1,960	6,330	4,080	1,820	5,900
1970	4,530	1,960	6,490	4,070	1,740	5,810
1971	4,640	1,960	6,600	3,940	1,630	5,570
1972	4,750	1,960	6,710	3,790	1,520	5,310
1973	4,860	1,960	6,820	3,620	1,410	5,030
1974	4,970	1,960	6,930	3,440	1,290	4,730
1975	5,080	1,960	7,040	3,250	1,180	4,430
1976	5,200	1,960	7,160	3,120	1,100	4,220
1977	5,310	1,960	7,270	2,900	1,010	3,910
1978	5,410	1,960	7,370	2,820	930	3,750
1979	5,530	1,960	7,490	2,700	860	3,560
1980	5,630	1,960	7,590	2,490	750	3,240

Note: These forecasts do not include nonoperating revenues, noncargo-related rents, or possible revenues from the development of the Port's Northern Waterfront. The analysis of these latter components of revenue is carried out in Section IV.

The Port has commenced the implementation of the program by the construction of Pier 80, in accordance with the recommendations in the Arthur D. Little report, which suggested that the first phase in port development should be a combination container/breakbulk facility. Pier 80 is 68 acres and is an excellent facility for the traffic for which it was designed.

The Port further continued the fill and the upgrading of the area immediately south of Islais Creek from Pier 80. To date

it has modernized the Grain Terminal, which had to be either leveled or modernized; it could not remain in its then existing condition, because although its storage facilities were excellent, its operation had become commercially obsolescent in the light of technological developments in other waterfront grain terminals. In the area surrounding the Grain Terminal, the Port graded, paved, and lighted an area for its automobile depot which can later, if needed, be converted to further storage facilities.

Meanwhile, the fill went on for the area which is to be Pier 94. This is now 100 acres of filled land and the dock face will total another 14 acres. Immediately adjacent to this is the LASH terminal, totalling 55 acres, which will be operational early in 1972.

Pier 98 has been approved by BCDC, but will take some time for construction and when completed will be a 2-berth, 48-acre facility.

To further carry out the recommendations of the consultants, the Port also purchased the last available high land on the market, now known as the Alvord property. The Port intends to use this property in its present condition, but its eventual plan is to produce a 5-berth facility, referred to in this report as Piers 70-72.

The combination of these facilities would be the response required by the Arthur D. Little report and meeting that criteria is critical to the Port's welfare.

As the Arthur D. Little report points out, if the Port does not modernize it not only loses the market for future business, but will lose its present business as well. Existing Port indebtedness could no longer be met out of Port revenues. Modernization at this very moment is critical, both for present business and for future expanded trade.

In addition to the modernization recommended by the various studies, each of the studies also recommended that the Port commence the phasing out of finger piers. Some of these piers are in poor physical condition. A number of the piers are not in particularly bad physical condition, but are commercially obsolete for the new generation of ships and the new types of cargo handling technology clearly in the offing at the time of the study findings.

These recommendations were immediately implemented by the Port, which ceased maintenance on certain pier facilities it had elected to phase out. A total of 29 berths are being eliminated under the Port Master Plan.

Under the Port Master Plan the following berths have been or will be added or will be modified: Pier 80, 7 berths, completed in 1967; Pier 94, 4 berths; Pier 96, 2 berths, to be completed early 1972; Pier 98, 2 berths, Pier 70-72, 5 berths, making a total of 20 berths planned during this decade.

In addition, Piers 34-46a will be consolidated, Piers 48-50 may be joined and Piers 54-64 may be consolidated into one facility. Further development of these areas are in part dependent on what type specialized needs must be serviced, i.e., automobiles, paper, steel, etc. Some modernization will undoubtedly take place in these areas also.

A word should be added about commercial obsolescence. Many of the lines which come into San Francisco are and will remain primarily breakbulk carriers. By experience, however, we have found that most breakbulk carriers now carry at least a few containers. While containers have not been standardized, most containers are either 20' long or 40' long, and all containers are 8' wide.

Many of our stringers along the finger piers are 18' in width. While it is theoretically possible to land a 40' container containing up to 35 tons on an 18' wide stringer, it is not practical. The same actually is true of a 20' container which contains up to 20 tons. It is almost impossible to completely eliminate sway from the heavy cargo handling equipment lifting the box off the deck of the ship onto the deck of the pier. It is also extremely difficult, if not impossible, to insure that all containers land exactly straight. No steamship owner can any longer afford to call at 2 piers, so it means that if he discharges his breakbulk at a finger pier with narrow aprons, he must also be able to discharge his containers there.

The only alternative, therefore, is to widen the apron. However, due to congestion on The Embarcadero, age of the facilities, and lack of backup land, expenditures for this kind of improvement are seldom warranted. Thus, even though a finger pier may physically stand for some time, many are regarded as commercially obsolete.

This does not apply to every finger pier on the waterfront. Some of the piers were built with wider aprons and with adequate facilities for removing heavy containers. These finger piers will, therefore, remain and will not be phased out. The 29 berthing spaces we have referred to are on either physically or commercially obsolescent piers.

The last consideration in the Port's planning is whether or not the Bay Area now has adequate facilities, even assuming San Francisco does not modernize. It is our conclusion that all of the economies justify the modernization of this port.

The Port of Oakland has 5 container cranes at 7 berths at the Seventh Street Terminal. These, together with the 3 cranes at the Sea-Land facility and 2 cranes at Seatrain, make a total of 10 serving the entire port. In addition, Oakland recently purchased 50 acres in Middle Harbor which, together with Seatrain facilities, make a total of 85 acres. They plan to add 2 cranes and 2 berths in Middle Harbor, probably to serve an existing tenant. The Port of Oakland Seventh Street facility dike was financed by the BARTD, in exchange for a right-of-way. Much of the actual terminal was financed by the Economic Development Administration with a $10 million federal grant (60%) and loan (40%).

The Port of Richmond has received a grant from the Economic Development Administration for a 'feasibility study' to help determine whether container facilities should be built there, and particularly whether three berths should be produced. While the results of this study will not be known until the end of 1971, it should take into consideration the existing plans and programs of the ports of San Francisco and Oakland, particularly since the Port of Richmond is not a general cargo port and has never been a significant factor in Bay Area general cargo tonnage.

The ports of Sacramento and Stockton are river ports and as such will not develop into containerports because of the transit time and navigation hazards involved. Large container ships and LASH ships cannot afford to call at more than one port in the Bay; today the cargo comes to the ship.

The larger, more expensive ships cannot afford the costly port time. It takes 8 hours steaming time to go up to Stockton

or Sacramento and 8 hours back. No breakbulk general cargo steamship company deems it practical to transit the river for less than the tonnage which can be loaded in at least one 6-hour shift. There is always tonnage available for berth liner vessels in lower San Francisco Bay and few of the modern ships can afford this much transit and port time.

The Port of Benicia is also up-river and until all available facilities in San Francisco and Oakland are utilized we cannot see a major general cargo/containerport facility developing in this area. The Port of Redwood City is infrequently used as a general cargo port. Neither port has the status of a terminal port.

Oakland tonnage and San Francisco tonnage are now approximately equal. This includes the Seatrain tonnage which, until its purchase by the Port of Oakland, was not actually a part of the port. The arrangement with Seatrain keeps the facility as a special facility for Seatrain on a lease-back arrangement.

If, therefore, we consider the normal growth expectation of the Bay Area and world trade to double by 1980, it is readily apparent that San Francisco must have the facilities planned and that the trade likewise requires the facilities produced in the East Bay. If we assume, as shown in Part VIII of this report, that Bay Area world trade will expand so that by the year 2020 the 45 million tons now passing through the Bay will be 174 million tons, it is obvious that San Francisco's present plan is in fact conservative.

What San Francisco contemplates building today will be multi-use facilities adaptable for any form of transportation (LASH, container, breakbulk, roll-on/roll-off, carry-on/carry-off,

lift-on/lift-off) and designed to take care of special cargo handling problems.

The development contemplated is vital to the Port and is essential to the economic health of this community.

For many years the Port has been cognizant of its duty to develop non-shipping properties and obsolescent shipping property for commercial/public access facilities and to this end the Port is working closely with City Planning, interested citizens and the various regional and local agencies involved to make sure that these facilities will become even greater assets to the City and the area. The Port is currently in the process of refining its public access studies to that end and will continue to work with these interests in a positive manner.

This report concentrates primarily on the shipping and cargo functions of the Port. However, we would be remiss if we did not call attention to the non-shipping side of the Port. Commercial development and development for the benefit of the citizenry must go hand in hand with shipping terminal development. In fact, the Port of San Francisco, like every other major port in the United States and the world, is dependent upon non-shipping sources of revenue to provide the shipping function.

The Arthur D. Little report of 1966 makes the following comment:

" . . . new and modernized terminal facilities will be needed; the Port will need all of the property presently under its jurisdiction to locate and finance these facilities. However, sections of the Port lands can and should be developed for uses not directly connected with marine terminals and cargo handling facilities.

"The optimum use of the Port's property would involve the expansion of commercial, recreational and, perhaps, residential uses within the area controlled by the Port Authority. Sections of the Port property can be developed and managed on a continuing basis, in a manner that will enhance the vitality and economic strength of the entire area included within the study. At the same time, the revenues produced by these uses can provide the Port with the funds that will be required to provide new cargo facilities . . ." (underlining added)

The Department of City Planning in response to the Resolution of the Board of Supervisors and in the adoption of its master plan has determined the kinds and types of commercial development and the plans for public access. The conclusions are summarized on the maps prepared by the Department in cooperation with the Port.

Section B

San Francisco Port Needs, Shipping, and Area Requirements

PORT OF SAN FRANCISCO

CAPITAL IMPROVEMENT PROJECTS 1972-82 AND

CURRENT CAPITAL IMPROVEMENTS

October 1, 1971

SECTION B

CAPITAL IMPROVEMENT PROGRAM

The Proposed Capital Improvement Program for the Port of San Francisco for the next ten years consists of fifty-eight projects at a total cost of $208,519,597. Funds have already been provided for $29,202,597 of this total, most of which is for the LASH terminal now under construction.

A total of $21,005,000 will be provided from available balances in the operating fund, $157,580,000 will be provided from proposed bond issues, and $732,000 will be provided from private sources who wish to develop Port property.

Surveys made in the past have shown that the Port would be better off financially if it provided modern cargo handling facilities and followed an aggressive policy of commercial development rather than not developing the facilities.

In the publication, "San Francisco's Maritime Future: Revolution and Response", issued by Arthur D. Little, Inc., in November, 1967, it is stated on Page 26, "If the Port fails to provide an adequate container handling facility it will lose one-third to one-half of its cargo generated revenue by 1980". Table 6 of that publication estimates cargo generated revenues with the Port making improvements in Forecast A, and no improvements in Forecast B. The estimated revenue under full response goes from $5,309,000 in 1966 to $7,590,000 in 1980. With no response as shown in Forecast B, the revenue drops from $5,309,000 in 1966 to $3,240,000 in 1980. Table 8 of that same publication shows the estimated cash flow,

excluding bond servicing, if the Port did not make improvements, with the cash flow dropping from $3,620,000 in 1968 to $1,030,000 in 1980.

The publication, "Report of Waterfront Committee", issued December 14, 1970, by Gruen, Gruen and Associates, also points out the importance of developing Port property. Table XI of that publication gives the estimated revenue and expenses for the period from 1970 to 2000 assuming the investment of $79,000,000 in new facilities. In this forecast, estimated cargo revenue increases from $5,646,000 to $18,000,000, and non-cargo revenue increases from $3,635,000 to $8,800,000. The last column of this table gives the net available for debt service.

This forecast was represented to the Port as an optimistic estimate of revenue. The Port did not agree that it was optimistic but felt that it was conservative. However, because of the strike, the projection now appears to be realistic. This table shows the importance of non-cargo revenue which amounts to approximately 30% of the total revenue to the Port in each year of this projection. This commercial development keeps the Port solvent.

The Finance Committee of the American Association of Port Authorities made a survey of thirty-one major ports in the United States in 1971, about one-third of the total that qualify as a "port", and reported that all of them are subsidized by other revenue. The report shows that California ports had a net income from maritime operations more than six times as much as they received from governing bodies, whereas the Pacific Northwest

ports had a deficit from maritime operations and their revenue from government sources, principally taxes and partly services provided, was 88% of their total revenue from maritime operations. The Port of San Francisco has never been tax supported and did not receive any other subsidy from government sources in 1970, whereas the Port of Seattle, for example, received $7,626,052 in advalorem tax levy, and $969,521 in Federal grants, as reported in their financial statements.[13] However, despite this, San Francisco, as all other ports, requires financial protection from income derived from some outside sources. The Port's outside income is derived from commercial development. Actually the total area in San Francisco used or usable for such development is small compared with other neighboring ports.

The Finance Committee Report, supra, showed that only California ports made a net return over investment from solely maritime revenue sources. Maritime operations of the Port of San Francisco is approximately 300% better than the average of the other ports showing net return on investment - but despite this, San Francisco, as all other ports, requires income derived from non-maritime sources for financial protection.

The material presented here contains summarized information on the reports prepared by and for the Port in connection with Port funding. Conversion of phased out property to other development and continuation of existing income from all sources is reflected in the annexed tables. In assessing income from commercial development, it has been assumed that public recreation and amenities will

likewise be provided. Non-maritime income has kept the Port off the tax rolls and will continue to do so. Many other ports throughout the world are tax subsidized in one way or another.

The Port of San Francisco since 1909 has issued 15 General Obligation Bonds totalling $79,303,000 in principal, and since 1954 has issued three Revenue Bonds totalling $25,600,000 in principal. All obligations, including the General Obligation Bonds previously issued, all interest on the Bonds and all Revenue Bonds have been met without delay or default solely from Port revenue.

Table XIV of the "Report of Waterfront Committee" used the net available for debt service from Table XI to show the cash flow after issuing $79,000,000 in General Obligation Bonds. While this table shows deficits for the first few years it shows an overall surplus of $98,912,000.

The Port anticipates that it will do better than the forecast in this table by increasing revenue more rapidly and by reducing the bond interest cost. Each bond issued for Port construction will have to be self-financing, with the additional revenue from the project sufficient to pay the interest and redemption of the bonds. The Port has always paid all bond costs out of its revenue and intends to continue.

PORT OF SAN FRANCISCO

CAPITAL IMPROVEMENT PROGRAM

roject mber	Description	Funded Projects	Surplus Revenue	Bond Funds	Private Funds	Total
1	Pier 98 - India Basin	500,000		22,400,000		22,900,000
2	Pier 94	1,000,000		32,900,000		33,900,000
3	Pier 92 Phase II	91,790				91,790
4	Pier 70-72			47,000,000		47,000,000
5	Piers 54-64			20,000,000		20,000,000
6	BARTD Vent Building	76,000				76,000
7	BARTD Platform		711,000			711,000
8	Ferry Bldg. - Concourse				140,000	140,000
9	Ferry Bldg. - Offices		170,000			170,000
0	Ferry Bldg. - Improvements	50,000	1,100,000			1,150,000
1	Ferry Bldg. - New Entrance		200,000			200,000
2	Ferry Bldg. - Air Conditioning		1,446,000			1,446,000
3	Ferry Bldg. - Remodel Garage		50,000		222,000	272,000
4	Improve China Basin Channel			9,700,000		9,700,000
5	Improve Islais Creek			5,300,000		5,300,000
6	Enlarge Pier 48			9,200,000		9,200,000
7	Modernize Lighting on Embarcadero		76,000			76,000
8	Relocate Belt Roundhouse				370,000	370,000
9	The Embarcadero, North Side		400,000			400,000
0	Reconstruct The Embarcadero		1,000,000			1,000,000
1	The Embarcadero Lighting		70,000			70,000
2	Bridge & View Platform		180,000			180,000
3	Public Access Develop.			1,000,000		1,000,000
4	New Maintenance Bldg.		517,000			517,000
5	The Embarcadero, Remove Tracks		225,000			225,000
6	Improve Pier 35		1,500,000			1,500,000
7	Improve Piers 90-92	50,000	50,000			100,000
8	New berth at Pier 80			4,000,000		4,000,000
9	Strengthen 3rd Street Bridge		300,000			300,000
0	Pier 27 Truck Crane			600,000		600,000
1	Pier 80 Container Crane			1,400,000		1,400,000
2	Sewer Connections for Ships	40,000	900,000			940,000
3	Sewer Connections for Piers	100,000	500,000			600,000
	Substructure Improvements					
4	At various Piers		1,200,000			1,200,000
5	Auto Repair & Distrib. Center		350,000			350,000
6	Freight Distribution Warehouse		1,100,000			1,100,000
7	Foreign Trade Zone		1,740,000			1,740,000
8	Alvord Grant Access		820,000			820,000
9	Warehouse & Distribution Center			4,080,000		4,080,000
0	Repair Damages	200,000	1,450,000			1,650,000

PORT OF SAN FRANCISCO

CAPITAL IMPROVEMENT PROGRAM

ect Description er	Funded Projects	Surplus Revenue	Bond Funds	Private Funds	Total
Alterations Requested by Tenants	266,667	1,500,000			1,766,667
Modify Various Piers	72,000	1,370,000			1,442,000
Repair Pier 80	360,148	400,000			760,148
Alterations at Pier 50	400,000				400,000
Raise Tracks at SWL 337	20,000				20,000
Improvements at Pier 23 Fisherman's Wharf	160,000				160,000
Breakwater at F. W.		1,120,000			1,120,000
Improvements at Pier 45		235,000			235,000
Fire Escape at Ferry Bldg.	60,000				60,000
Remove Connecting Sheds at Piers 24-26 & 26-28	150,000				150,000
Surcharge SWL 352	100,000				100,000
Replace Fire Boxes at Various Piers	2,500				2,500
Substructure Repairs at Various Piers	919,845				919,845
Construct LASH Terminal	24,289,190				24,289,190
Debris Dike at India Basin	32,539				32,539
Modifications at Pier 80	261,918				261,918
Access Road to Ferry Bldg.		300,000			300,000
Strengthen Deck at Pier 50		25,000			25,000
TOTALS	$29,202,597	21,005,000	157,580,000	732,000	208,519,597

Table 6

ALTERNATIVE FORECASTS OF THE PORT'S TRADE-GENERATED REVENUES

(Dollar figures in thousands)

Fiscal Year	Forecast A: Full Response			Forecast B: No Response		
	Dockage, Wharfage, Demurrage	Cargo-Related Rents	Total	Dockage, Wharfage, Demurrage	Cargo-Related Rents	Total
1966 (actual)	$3,442	$1,867	$5,309	$3,442	$1,867	$5,309
1967 (actual)	3,517	1,867	5,384	3,517	1,867	5,384
1968	4,220	1,960	6,180	4,070	1,890	5,960
1969	4,370	1,960	6,330	4,080	1,820	5,900
1970	4,530	1,960	6,490	4,070	1,740	5,810
1971	4,640	1,960	6,600	3,940	1,630	5,570
1972	4,750	1,960	6,710	3,790	1,520	5,310
1973	4,860	1,960	6,820	3,620	1,410	5,030
1974	4,970	1,960	6,930	3,440	1,290	4,730
1975	5,080	1,960	7,040	3,250	1,180	4,430
1976	5,200	1,960	7,160	3,120	1,100	4,220
1977	5,310	1,960	7,270	2,900	1,010	3,910
1978	5,410	1,960	7,370	2,820	930	3,750
1979	5,530	1,960	7,490	2,700	860	3,560
1980	5,630	1,960	7,590	2,490	750	3,240

Note: These forecasts do not include nonoperating revenues, noncargo-related rents, or possible revenues from the development of the Port's Northern Waterfront. The analysis of these latter components of revenue is carried out in Section IV.

Arthur D. Little, Inc.

NO RESPONSE TO CHANGING CARGO TECHNOLOGY
NO AGGRESSIVE COMMERCIAL DEVELOPMENT

(Dollar figures in thousands)

Item	Actual 1967 Prelim.	1968	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980
Operating Revenue														
Dockage, wharfage, demurrage (+15%)	$3,620	$4,070	$4,080	$4,070	$3,940	$3,790	$3,620	$3,440	$3,250	$3,120	$2,900	$2,820	$2,700	$2,490
Rent, cargo-related	1,910	1,890	1,820	1,740	1,630	1,520	1,410	1,290	1,180	1,100	1,010	930	860	750
Rent, noncargo-related (+4%)	2,340	2,430	2,520	2,620	2,730	2,840	2,950	3,070	3,190	3,320	3,450	3,590	3,740	3,890
Total rent	$4,250	$4,320	$4,340	$4,360	$4360	$4,350	$4,360	$4,360	$4,380	$4,420	$4,460	$4,520	$4,600	$4,640
Total operating revenue	$7,870	$8,390	$8,420	$8,430	$8,300	$8,140	$7,890	$7,800	$7,630	$7,540	$7,360	$7,340	$7,300	$7,130
Operating Expense														
Administration	670	690	710	730	750	780	800	820	850	870	900	930	960	980
Port operations	1,800	1,860	1,910	1,970	2,030	2,090	2,150	2,220	2,280	2,350	2,420	2,490	2,570	2,650
Maintenance	2,400	2,800	3,180	2,880	2,900	3,050	3,050	3,050	3,050	3,050	3,050	3,050	3,050	3,050
Total operating expense	$4,880	$5,350	$5,800	$5,580	$5,680	$5,920	$6,000	$6,090	$6,180	$6,270	$6,370	$6,470	$6,580	$6,680
Cash Flow from Operations	$2,990	$3,040	$2,620	$2,850	$2,620	$2,220	$1,890	$1,710	$1,450	$1,270	$990	$870	$720	$450
Cash Flow from Services	$690	$700	$710	$720	$730	$740	$750	$760	$770	$780	$790	$800	$810	$820
Cash Flow from Belt Line Railroad	-$110	-$120	-$130	-$140	-$150	-$160	-$170	-$180	-$190	-$200	-$210	-$220	-$230	-$240
Port Cash Flow from Operations, Services, Belt Line Railroad	$3,580	$3,620	$3,200	$3,430	$3,200	$2,800	$2,470	$2,290	$2,030	$1,850	$1,570	$1,450	$1,300	$1,030

Arthur D. Little, Inc.

$32,000,

Fiscal Year Ending June 30	(1) Estimated Cargo Revenue	(2) Estimated Non-Cargo Revenue	(3 Net B Railroo Revenu
1970	5,646,000	3,635,000	(294,
1971	5,700,000	3,700,000	(150,
1972	7,500,000	3,900,000	(160,
1973	8,300,000	4,000,000	(170,
1974	8,400,000	4,100,000	(180,
1975	8,600,000	4,200,000	(190,
1976	8,800,000	4,300,000	(200,
1977	11,900,000	4,500,000	(220,
1978	12,200,000	4,600,000	(220,
1979	12,500,000	4,700,000	(220,
1980	12,800,000	4,900,000	(220,
1981	13,100,000	5,000,000	(220,
1982	13,400,000	5,200,000	(220,
1983	13,700,000	5,300,000	(220,
1984	14,000,000	5,500,000	(220,
1985	14,300,000	5,700,000	(220,
1986	14,600,000	5,800,000	(220,
1987	14,800,000	6,000,000	(220,
1988	15,000,000	6,200,000	(220,
1989	15,300,000	6,400,000	(220,
1990	15,500,000	6,600,000	(220,
1991	15,700,000	6,800,000	(220,
1992	16,000,000	7,000,000	(220,
1993	16,200,000	7,200,000	(220,
1994	16,400,000	7,400,000	(220,
1995	16,700,000	7,600,000	(220,
1996	16,900,000	7,800,000	(220,
1997	17,200,000	8,100,000	(220,
1998	17,400,000	8,300,000	(220,
1999	17,700,000	8,600,000	(220,
2000	18,000,000	8,800,000	(220,

1993	15,380,000	7,812,000	7,568,000
1994	15,680,000	7,789,000	7,891,000
1995	16,080,000	7,622,000	8,458,000
1996	16,480,000	7,081,000	9,399,000
1997	16,880,000	6,831,000	10,049,000
1998	17,380,000	6,287,000	11,093,000
1999	17,780,000	6,325,000	11,455,000
2000	18,280,000	4,887,000	13,393,000

This Capital Improvement Program has been developed from current knowledge that is available to the staff of the San Francisco Port Commission. With the exception of Current Projects, scheduling of Capital Improvements for Port development must remain flexible to meet the demand of operations.

Note A: Under construction or to be undertaken in near future
Note B: Bond Fund Project
Note C: To be transferred to Pier 80, Structural Modifications
Note D: From Private Funds

Not shown on Capital Improvement Projects 1971-82, are major development areas proposed to be developed by private funds, or other than Port funds, such as:

A. Hyde Street Pier Commercial Development
B. Fish Alley Commercial Development
C. Pier 45 Commercial Development
D. Pier 37-39 Commercial Development
E. Pier 1-7 Commercial Development
F. Ferry Building Platform Commercial Development
G. Pier 14-24 Commercial Development
H. India Basin Recreation Area
I. Ferry Boat Terminal
J. Pedestrian Overpass or Underpass at Ferry Building.

(Revised September 21, 1971)

	1. India Basin, Pier 98: Construct 2 Berth Container Terminal (Note B)	2. Pier 94: Construct 4 Berth Container Terminal (Note B)	3. Pier 92: Surface, Fence and Improve Open Area for Auto-Storage - Phase II	4. Pier 70-72: Construct New 5 Berth Terminal (Note B)	5. Piers 54-64: Construct Terminal (Note B)
Funded Projects (Note A)	$ 400,000		$ 41,790		
Current Budget (1971-72)	100,000	$ 1,000,000	50,000		
1972-73		14,000,000			
1973-74	100,000	14,000,000			
1974-75	400,000	4,900,000			
1975-76	10,500,000				
1976-77	11,400,000				
1977-78					
1978-79				$ 2,000,000	
1979-80				15,000,000	
1980-81				15,000,000	$ 10,000,000
1981-82				15,000,000	10,000,000
TOTAL	$ 22,900,000	$ 33,900,000	$ 91,790	$ 47,000,000	$ 20,000,000

	6. BARTD Ventilation Building: Install Utilities for Proposed Commercial Development	7. BARTD Platform: Install Landscaping and Lighting	8. Ferry Building: Remodel Concourse Into Offices *(Note D)	9. Ferry Building: Remodel Port Commission Offices	10. Ferry Building: Upgrade and Beautify Portions of Exteriors and Make Interior Improvements	
Funded Projects (Note A)						
Current Budget (1971-72)	$ 76,000				$ 50,000	
1972-73			$ 140,000		100,000	
1973-74				$ 170,000	1,000,000	
1974-75		$ 211,000				
1975-76		500,000				
1976-77						
1977-78						
1978-79						
1979-80						
1980-81						
1981-82						
TOTAL	$ 76,000	$ 711,000	$ 140,000	$ 170,000	$ 1,150,000	

*Revised September 21, 1971

	11. Ferry Building: South Wing, Construct New Entrance and Install New Elevator	12. Ferry Building: Install Complete Air-Conditioning System	13. Ferry Building: Remodel Existing Garage into Offices and Relocate Garage to Adjacent Facility *(Note D -- $22,000.)	14. Make Improvements on China Basin Channel (Lighter Facility) (Note B)	15. Make Improvements on China Basin Channel Creek Channel (Lighter Facility) (Note B)	
Funded Projects (Note A)						
Current Budget (1971-72)						
1972-73			$ 50,000			
1973-74	$ 200,000		222,000		$ 300,000	
1974-75					5,000,000	
1975-76		$ 1,446,000		$ 700,000		
1976-77				4,500,000		
1977-78				4,500,000		
1978-79						
1979-80						
1980-81						
1981-82						
TOTAL	$ 200,000	$ 1,446,000	$ 272,000	$ 9,700,000	$ 5,300,000	

*Revised September 21, 1971

	16. Pier 48: Enlarge for Container Cargo (Note B)	17. The Embarcadero: Modern Street Lighting at Special Areas - Phase II	18. Belt Railroad: Relocate Roundhouse (Note D)	19. The Embarcadero: between Pier 7 and Powell Street: Renew Certain Railroad Tracks and Reconstruct Street	20. The Embarcadero: Various Portions Reconstruction
Funded Projects (Note A)					
Current Budget (1971-72)					
1972-73					
1973-74		$ 76,000	$ 370,000		
1974-75				$ 400,000	
1975-76					
1976-77					$ 1,000,000
1977-78					
1978-79					
1979-80	$ 9,200,000				
1980-81					
1981-82					
TOTAL	$ 9,200,000	$ 76,000	$ 370,000	$ 400,000	$ 1,000,000

	21. The Embarcadero: between Piers 1 and 16: Install Street Side Landscaping	22. Area between Piers 23 and 27: Construct Pedestrian Bridge and View Platform	23. Public Access Developments (Note B and Note D)	24. Construct New Maintenance Shop Building	25. The Embarcadero: Piers 1 to 7, & 14 to 22: Remove Railroad Tracks and Reconstruct Street	
Funded Projects (Note A)						
Current Budget (1971-72)						
1972-73			$ 100,000			
1973-74			200,000			
1974-75	$ 70,000		200,000			
1975-76		$ 180,000	200,000		$ 225,000	
1976-77			300,000			
1977-78						
1978-79				$ 517,000		
1979-80						
1980-81						
1981-82						
TOTAL	$ 70,000	$ 180,000	$ 1,000,000	$ 517,000	$ 225,000	

	26. Pier 35: Upgrade Passenger Terminal (Substructure Repairs Not Included)	27. Pier 90-92: Improve Road and Railroad Tracks	28. Pier 80: New Berth at S.W. Corner (Note B)	29. Strengthen Third Street and Channel Bridge and Revise Walk Approaches	30. Pier 27: Crane (Truck Container Crane)	
Funded Projects (Note A)		$ 50,000				
Current Budget (1971-72)						
1972-73						
1973-74		50,000			$ 600,000	
1974-75						
1975-76						
1976-77						
1977-78			$ 4,000,000			
1978-79						
1979-80	$ 1,500,000					
1980-81				$ 300,000		
1981-82						
TOTAL	$ 1,500,000	$ 100,000	$ 4,000,000	$ 300,000	$ 600,000	

	31. Pier 80: (Full Container Crane) (Note B)	32. Miscellaneous Piers: Ship Sewer Construction	33. Miscellaneous Piers: Sewer Connections for Unsewered Piers and Agriculture Building, Including Pier 35	34. Piers 9,15,17,19-23 and 35: Substructure Improvements and Repairs	35. Auto Repair and Distribution Center	
Funded Projects (Note A)			$ 100,000			
Current Budget (1971-72)		$ 40,000				
1972-73			$ 100,000	$ 200,000		
1973-74			100,000	500,000		
1974-75	$ 1,400,000	100,000	100,000	500,000		
1975-76		200,000	100,000			
1976-77		100,000	100,000			
1977-78		100,000			$ 350,000	
1978-79		100,000				
1979-80		100,000				
1980-81		100,000				
1981-82		100,000				
TOTAL	$ 1,400,000	$ 940,000	$ 600,000	$ 1,200,000	$ 350,000	

	36. Freight Distribution Warehouse	37. Foreign Trade Zone	38. Alvord Grant: Industrial Development Access	39. Consolidated Warehouse and Distribution Center (Note B)	40. Various Piers: Repair Damages	
Funded Projects (Note A)					$ 100,000	
Current Budget (1971-72)					100,000	
1972-73					100,000	
1973-74					150,000	
1974-75					150,000	
1975-76					150,000	
1976-77					150,000	
1977-78			$ 820,000		150,000	
1978-79	$ 1,100,000			$ 4,080,000	150,000	
1979-80		$ 1,740,000			150,000	
1980-81					150,000	
1981-82					150,000	
TOTAL	$ 1,100,000	$ 1,740,000	$ 820,000	$ 4,080,000	$ 1,650,000	

	41. Various Piers: Make Alterations as Required by Tenants	42. Various Piers: Enlarge and Strengthen Doors Buildings, Aprons, etc.	43. Pier 80: Army Street Terminal Subsidence Repairs	44. Pier 50: Alteration for Partial Container Yard (Note C)	45. Seawall Lot 337: Raise Railroad Tracks	
Funded Projects (Note A)	$ 116,667		$ 200,148			
Current Budget (1971-72)	150,000	$ 72,000	100,000	$ 400,000	$ 20,000	
1972-73	150,000	20,000	100,000			
1973-74	150,000	150,000	100,000			
1974-75	150,000	150,000	100,000			
1975-76	150,000	150,000	100,000			
1976-77	150,000	150,000				
1977-78	150,000	150,000				
1978-79	150,000	150,000				
1979-80	150,000	150,000				
1980-81	150,000	150,000				
1981-82	150,000	150,000				
TOTAL	$ 1,766,667	$ 1,442,000	$ 700,148	$ 400,000	$ 20,000	

(Revised September 3, 1971)

	46. Repair of Coast Guard Building; Beautification of Fishermans Wharf (Prior Y-3)	47. Fishermans Wharf: Construct Breakwater at Fishermans Wharf Basin	48. Pier 45: Make Improvements in Preparation for Commercial Development - Phase II	49. Ferry Building: Construct Fire Escape South Side of Building	50. Piers 24-26, 26-28: Remove Connecting Sheds and Reinforce Substructure for Handli
Funded Projects (Note A)				$ 150,000	
Current Budget (1971-72)	$ 160,000			$ 60,000.	
1972-73					
1973-74					
1974-75					
1975-76			$ 235,000		
1976-77					
1977-78					
1978-79		$ 1,120,000			
1979-80					
1980-81					
1981-82					
TOTAL	$ 160,000	$ 1,120,000	$ 235,000	$ 60,000	$ 150,000

	51. Lot 352: Surcharge N. and E. Sides of Dike to Accelerate Land Reclamation	52. Piers 33,35,37,39 and 43: Replace Fire Boxes	53. Piers 26,28,30, and 32: Make Gunite Repairs to Decks and Piers: File and Foundation Repairs	54. Lash Terminal: Construction (Note B)	55. Indio Basin: Construct and Maintain Debris Dike Fence	
Funded Projects (Note A)	$ 100,000	$ 2,500	$ 919,845	$ 24,289,190	$ 32,539	
Current Budget (1971-72)						
1972-73						
1973-74						
1974-75						
1975-76						
1976-77						
1977-78						
1978-79						
1979-80						
1980-81						
1981-82						
TOTAL	$ 100,000	$ 2,500	$ 919,845	$ 24,289,190	$ 32,539	

(Revised September 3, 1971)

	56. Pier 80: Structural Modifications	57. Ferry Building: Rebuild Access Road at North Side	58. Strengthen Deck at Pier 50, S.E. Corner (Note D)		TOTAL 1971-82
Funded Projects (Note A)	$ 261,918				$ 26,824,597
Current Budget (1971-72)					2,376,000
1972-73			$ 25,000		15,025,000
1973-74					18,438,000
1974-75					13,831,000
1975-76					14,836,000
1976-77					17,850,000
1977-78					10,220,000
1978-79		$ 300,000			9,667,000
1979-80					27,990,000
1980-81					25,850,000
1981-82					25,550,000
TOTAL	$ 261,918	$ 300,000	$ 25,000		$208,519,597

FOOTNOTES

Section A

1. The following reports are specifically incorporated by reference into this Master Plan Study:

   Port of San Francisco, Facilities Improvement Survey for the San Francisco Port Authority, Vol. 1, EBASCO Services, Inc., July, 1959.

   The Port of San Francisco, an in-depth Study of its Impact on the City, its Economic Future, the Potential of its Northern Waterfront, Arthur D. Little, Inc., September, 1966.

   San Francisco's Maritime Future, Revolution and Response, Arthur D. Little, Inc., November, 1967.

   Report of Waterfront Committee, Gruen, Gruen and Associates, December 14, 1970.

2. The U.S. Corps of Engineers is seeking an appropriation of approximately $4 million to do an in-depth study over a period of several years to gather these data.

3. Robert McLellan, Assistant Secretary of Commerce, USDC, International Conference of the Bureau of International De La Recuperation, New York City, June 15, 1971.

4. International Marketing Information Service, Exhibitor's Export Market Guide, U. S. Department of Commerce, December, 1970.

5. Robert J. Blackwell, Deputy Maritime Administrator, U.S. Department of Commerce, North Atlantic Ports Association Semi-Annual Meeting, Washington, D. C., December 3, 1970.

6. Robert McLellan, Assistant Secretary of Commerce for Domestic and International Business, Sixtieth Annual Ohio Valley International Trade Conference, Dayton, Ohio, May 21, 1971.

7. S. F. Alioto, Chairman, Interolsen Agencies, California Chamber of Commerce, Pacific, September, 1968.

8. The Modern Challenge to Port Management, Harry C. Brockel, Former Director Port of Milwaukee, Seventh I.A.P.H. Conference, Montreal, June, 1971, p. 46.

9. San Francisco Business, July, 1971, N. Calif. Headquarters, Security Pacific Bank.

10. Port of London Magazine, May, 1971, p. 129.

11. Florida Journal of Commerce, June, 1971.

12. Comprehensive Framework Study, California Region, Appendix XVII, for Pacific Southwest Inter-Agency Committee, Water Resources Council, June, 1971. (This report is being submitted to WRC for review and therefore is not yet an official document.)

Section B

13. Port of Seattle, Annual Report, 1970.

14. Port believes it is a realistic forecast but not an optimistic forecast.

15. The table was based on a $32,000,000 bond issue started in 1972, and a second bond issue of $47,000,000 starting in 1975, each with an estimated bond interest rate of 5½%. The Port intends to issue $34,000,000 in general obligation bonds starting in 1972 at an anticipated interest rate of 5% or less. The reduced rate would permit the issuance of the additional $2,000,000 in bonds without any additional cost. Also, it is possible that the additional cost of the first project will be offset by savings in the second one.

PROPOSED LASH
LOADING & STORAGE
MARITIME USE
A N C

PROPOSED LASH LOADING & STORAGE
PROPOSED LASH LOADING & STORAGE
PROPOSED LASH & CONTAINER TERMINALS
GRAIN TERMINAL
FUTURE PIER 72
FUTURE PIER 50
POSSIBLE PUBLIC ACCESS
MARITIME USE
NON MARITIME DEVELOPMENT AREA
NON MARITIME DEVELOPMENT AREA
MARITIME USE
PROPOSED DEVELOPMENT
UNDER CONSTRUCTION
DESIGN UNDER WAY
PROPOSED DEVELOPMENT
PROPOSED DEVELOPMENT ON EXISTING STRUCTURE
B A Y O F S A N F R A N C I S C O
PORT OF SAN FRANCISCO
Line of City Jurisdiction
Sec. 1770, H.&N. Code, 1961
AUGUST 12, 1970

SAN FRANCISCO PORT FACILITIES MAP